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growth adj factor near10 tissue and tissue near10 (bond\$ or bind\$ or associate?)	372

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onlay, the onlay of this invention is adopted for epithelial recolonization.

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File: USPT

Feb 3, 1998

DOCUMENT-IDENTIFIER: US 5713957 A

TITLE: Corneal onlays

BSPR:

We have now surprisingly found that the flow of high molecular weight tissue fluid components such as proteins and glycoproteins (for example, growth factors, peptide and protein hormones, and proteins associated with the transport of essential metals) and the like, across a corneal implant, that is, from epithelial cells to stromal cells and even to the endothelial layer and beyond, is essential for long term maintenance and viability of tissue anterior and posterior to a corneal implant. In the context of implants within the corneal epithelium, wherein an area of epithelial cells are degraded and an implant inserted either within the remaining epithelium or on the basement membrane, the flow of tissue fluid components necessary for the all important coverage of an implant with adhered epithelial cells is critical. This includes tissue fluid flowing from the stromal tissue beneath the implant towards the tissue on the anterior surface (and particularly the epithelial tissue) during the process of the initial coverage of the anterior surface with epithelial cells, and the flow of proteinaceous components from these epithelial cells to the stromal tissue and beyond.

BSPR:

The outer posterior and anterior surface of the corneal onlay may be modified by the application of a polymer having pendant groups capable of being converted to reactive functional groups which are thereafter capable of covalently coupling to the onlay surface. For example, a surface modifying composition may comprise a poly amino acid, such as polylysine, where, for example, about 10 mol percent of pendant groups are capable of being converted to nitrene functional groups. The modified surface may of itself, stimulate the adhesion of cells adjacent to the implanted onlay, such as epithelial cells, or cells of the stroma. Alternatively, the modified surface may be coated with one or more components which promote the growth of tissue adjacent to the implanted onlay. For example, such materials include fibronectin, laminin, chondroitin sulphate, collagen, cell attachment proteins, anti-gelatinase factor, cold-insoluble globulin, chondronectin, epidermal growth factor, mussel adhesive protein, thrombospondin, vitronectin, and various proteoglycans, and/or derivatives of the above and mixtures thereof. Fibronectin, derivatives of fibronectin, epidermal growth factor, derivatives of epidermal growth factor and mixtures thereof are particularly useful. Alternatively, the corneal onlay itself without surface modification may be directly coated with one or more components which promote the growth of tissue adjacent to the implanted onlay and/or cell adhesion to the onlay. These components may be any component or components which provide cell adhesion and/or promote cell growth such as growth factors and adhesion factors. Preferred materials are those detailed in connection with the application to a surface modified corneal onlay. Preferably, the coating of components which promote the growth of tissue adjacent to the implanted onlay are covalently bonded to the onlay, without effecting the optical properties thereof. As a result of surface modifications, or by virtue of inherent properties of the onlay, the onlay of this invention is adopted for epithelial recolonization.